

JP-A-9-123,748

The Examiner has requested a copy of JP-A-9-123,748. This Japanese document is a publication/patent which matured from Japanese Application Number 07-235,505. Japanese Application Number 07-235,505 claimed priority from Japanese Application Numbers 06-227,592 and 07-220,903. All three of these Japanese documents were claimed as foreign priority data in U.S. Patent No. 5,755,107. U.S. Patent No. 5,755,197 was cited by the Applicants in an IDS filed concurrently with this application. Thus, the disclosure of the JP-A-9-123,748 document is located within the U.S. 5,755,107 patent and thus a separate copy should not be required. A copy of 09-123748A cover sheet is enclosed for the Examiner's review.

PCT Search Report

A copy of the international search report is included with this amendment pursuant to the Examiner's request. The search report identified four documents. JP-10-244820 cited in the previously filed IDS by Applicants. JP-9-123736 a priority document in the 5,755,107 U.S. patent cited by the Applicants in the previously filed IDS. JP 8-295128 cited in the previously filed IDS by Applicants. JP 8-104129 a priority document in the 5,755,107 U.S. patent cited by the Applicants in the previously filed IDS.

Objections to the Drawings

The drawings are objected to because Figs. 6A and 6B must be legended PRIOR ART. The drawings have been amended to overcome the objection. Withdrawal of the objection is respectfully requested.

PCT/JP98/03586

This is an application that is being filed as a continuation application of PCT/JP98/03586 rather than entering the national stage via 35 U.S.C. § 371. Enclosed with this amendment is a copy of the published PCT application WO99/07568 which is the publication number for the

PCT/JP98/03586 application as shown on the cover sheet of the publication. This document along with the enclosed Search Report clearly show this application was filed August 10, 1998 claiming priority of JP-9-216539 filed August 11, 1997. Chapter I of the PCT requires an Applicant to enter Chapter II 19 months from the priority date (March 11, 1999) or to enter the national stage 20 months from the priority date (April 11 1999). The present continuation application was filed on April 9, 1999 which is prior to the 20 month deadline of the PCT application. Thus, the PCT application was pending at the time of filing the U.S. continuation application.

9.
Rejections Under 35 U.S.C. § 103

Claims 1-17 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Shirota et al. '107 or Ito et al. '368 or JP-A-9-123,748 (forthcoming from Applicants) in view of JA-A-10-244,820 or JA-A-8-295,128 or Hermann (Fig. 6) or Secquerel. In a prior art case where a cooling heat exchanger is disposed slightly inclined relative to a horizontal direction, so that air introduced into a lower space under the cooling heat exchanger passes through the cooling heat exchanger upwardly from below, when the air-introduction direction into the lower space under the cooling heat exchanger is the same as a longitudinal direction of tubes of the cooling heat exchanger, the draining performance of the condensed water is deteriorated for the following reason. That is, condensed water generated in the cooling heat exchanger moves by gravity to a lower side surface of the cooling heat exchanger, and then moves along the tubes in the longitudinal direction to be collected at an inclined lower end of the tubes of the cooling heat exchanger. On the other hand, because the main flow (i.e., the air flow having a high air-flow velocity) of air introduced into the lower space under the cooling heat exchanger also flows toward the inclined lower end of the cooling heat exchanger, a high air-pressure area (E) is formed around the entire inclined lower end of the cooling heat exchanger. Therefore, the high air-pressure area (E) corresponds to the entire inclined lower end of the cooling heat exchanger. Thus, relative to condensed water falling downwardly from the inclined lower end

due to gravity, air in the high air-pressure area flows upwardly. As a result, the fall of condensed water is disturbed, and the draining performance of condensed water is deteriorated.

To overcome this problem, in each of the amended Claims 1, 8 of the present invention, while the cooling heat exchanger is disposed to be inclined from a horizontal direction by a predetermined angle so that air is introduced into the cooling heat exchanger from below and flows upwardly, the flow direction of air flowing into the lower space under the cooling heat exchanger is approximately perpendicular to the longitudinal direction of the tubes of the cooling heat exchanger. Therefore, the high air-pressure area (E) of air introduced into the lower space under the cooling heat exchanger is formed only at one side of the inclined lower end of the cooling heat exchanger. Thus, the high air-pressure area (E) only corresponds to a small part of the inclined lower end of the cooling heat exchanger, where condensed water is collected. As a result, the falling of the condensed water is hardly affected by air flow from the high air-pressure area (E).

However, the Shirota (USP 5,755,107) or in Ito (USP 5,711,368), while the cooling heat exchanger is disposed inclined relative to a horizontal direction so that air introduced into a lower space under the cooling heat exchanger passes through the cooling heat exchanger upwardly from below, the air-introduction direction into the lower space under the cooling heat exchanger is in the same direction as a longitudinal direction of tubes of the cooling heat exchanger, as described for the prior art above. Therefore, the draining performance of condensed water is deteriorated in both Shirota and Ito.

JP-A-10-244820 is published on September 14, 1998 that is later than the priority date (August 11, 1997) of the present invention and the international filing date (August 10, 1998) of the present invention. Therefore, the present invention should not be rejected by JP-A-10-244820.

In JP-A-8-295128, air introduced from an air inlet (6) is blown toward an outlet (5) after passing through a cooling heat exchanger (3). When being simply viewed from FIG. 2(b), tubes

(3a) are inclined downwardly from that of the present invention. That is, in JP-A-8-295128, the inclination direction of the cooling heat exchanger (3) is not the same as the longitudinal direction of the tubes (3a). Therefore, in JP-A-8-295128, one side end of each tube (3a) in the longitudinal direction is placed at the same height position as the other side end thereof in the longitudinal direction. Thus, condensed water is not collected to the lower side ends of tubes in the longitudinal direction, and the problem to be solved in the present invention is not caused.

In Hermann (USP 4,874,040), an air-blowing direction under the heat exchange element (5) is parallel to the longitudinal direction of tubes. Further, in Hermann, there is nothing disclosed regarding the structure defined in claims of the present invention. 1 9

Further, in Secquerel (USP 5,135,046), as shown in FIG. 6, the heat exchanger (90) is a vertical type in which air passes through the heat exchanger (90) horizontally. Further, in Secquerel, there is nothing described regarding the problem to be solved in the present invention.

Thus, Applicant believes independent Claims 1 and 8 as well as Claims 2-7 which ultimately depend from Claim 1 and Claims 9-17 which ultimately depend from Claim 8 patentably distinguish over the art of record. Reconsideration of the rejection is respectfully requested.

New Claims

New Claims 18-24 are dependent claims that ultimately depend from Claims 1 or 8 and are thus believed to be allowable.


In light of the above amendments and remarks, Applicant would submit that all Claims are in a condition for allowance and thus Applicant requests that the Examiner pass the case to issue at his earliest possible convenience.

Should the Examiner have any questions regarding the present amendment he should not hesitate to contact the undersigned at (248) 641-1600.

Respectfully submitted,

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Date


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